ments may also receive data (e.g. feedback data) from the client device or directly from the cloud gaming server.

[0144] It should be understood that the various embodiments defined herein may be combined or assembled into specific implementations using the various features disclosed herein. Thus, the examples provided are just some possible examples, without limitation to the various implementations that are possible by combining the various elements to define many more implementations. In some examples, some implementations may include fewer elements, without departing from the spirit of the disclosed or equivalent implementations.

[0145] Embodiments of the present disclosure may be practiced with various computer system configurations including hand-held devices, microprocessor systems, microprocessor-based or programmable consumer electronics, minicomputers, mainframe computers and the like. Embodiments of the present disclosure can also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a wire-based or wireless network.

[0146] With the above embodiments in mind, it should be understood that embodiments of the present disclosure can employ various computer-implemented operations involving data stored in computer systems. These operations are those requiring physical manipulation of physical quantities. Any of the operations described herein that form part of embodiments of the present disclosure are useful machine operations. Embodiments of the invention also relate to a device or an apparatus for performing these operations. The apparatus can be specially constructed for the required purpose, or the apparatus can be a general-purpose computer selectively activated or configured by a computer program stored in the computer. In particular, various general-purpose machines can be used with computer programs written in accordance with the teachings herein, or it may be more convenient to construct a more specialized apparatus to perform the required operations.

[0147] The disclosure can also be embodied as computer readable code on a computer readable medium. The computer readable medium is any data storage device that can store data, which can be thereafter be read by a computer system. Examples of the computer readable medium include hard drives, network attached storage (NAS), read-only memory, random-access memory, CD-ROMs, CD-Rs, CD-RWs, magnetic tapes and other optical and non-optical data storage devices. The computer readable medium can include computer readable tangible medium distributed over a network-coupled computer system so that the computer readable code is stored and executed in a distributed fashion.

[0148] Although the method operations were described in a specific order, it should be understood that other housekeeping operations may be performed in between operations, or operations may be adjusted so that they occur at slightly different times, or may be distributed in a system which allows the occurrence of the processing operations at various intervals associated with the processing, as long as the processing of the overlay operations are performed in the desired way.

[0149] Although the foregoing disclosure has been described in some detail for purposes of clarity of understanding, it will be apparent that certain changes and modifications can be practiced within the scope of the appended claims. Accordingly, the present embodiments are to be considered as illustrative and not restrictive, and embodiments of the present disclosure is not to be limited to the details given herein, but may be modified within the scope and equivalents of the appended claims.

What is claimed is:

1. A method for gaming, comprising:

receiving, over a network, a stream of video frames of a multi-player gaming session from a back-end game server executing a video game, wherein the stream of video frames is received at a local device of a first player participating the multi-player gaming session, wherein the first player is controlling a first character in the multi-player gaming session, wherein a second player is controlling a second character in the multi-player gaming session;

detecting that a network connection between the local device and the back-end game server communicating through the network is below a quality of service (QoS) metric;

responsive to the detecting that the network connection is below the QoS metric, instantiating a local instance of the video game at the local device using game state data and user data of a plurality of players participating in the multi-player gaming session to enable game play by the first player of the video game;

controlling the second character in the local instance of the video game using an AI model configured with AI state data to emulate behavior of the second player; and

sending video frames generated through execution of the local instance of the video game to a display associated with the first player.

2. The method of claim **1**, further comprising:

pausing sending of the stream of video frames of the multi-player gaming session to the display.

3. The method of claim **1**, further comprising:

receiving a plurality of controller inputs for controlling the second character from the back-end server executing the AI model configured with the AI state data.

4. The method of claim **1**, further comprising:

executing at the local device the AI model configured with the AI state data to generate a plurality of controller inputs for controlling the second character.

5. The method of claim **1**, further comprising:

detecting that the network connection is above the QoS metric; and

restoring the multi-player gaming session by sending the stream of video frames received from the back-end game server to the display.

6. The method of claim **5**, further comprising:

terminating or pausing execution of the local instance of the video game.

7. The method of claim **5**, further comprising:

determining a divergence from a game play of the multi-player gaming session and the game play of the first player in the local instance of the video game;

generating one or more transition scenes; and

sending the one or more transition scenes to the display before sending the stream of video frames in the multi-player gaming session that is restored.

8. A non-transitory computer-readable medium storing a computer program for gaming, the computer-readable medium comprising:

program instructions for receiving, over a network, a stream of video frames of a multi-player gaming ses-